

WO 2005/103296

SEQUENCE LISTING

<110> Vector Tobacco, Ltd.

<120> GLOBAL GENE EXPRESSION ANALYSIS OF HUMAN
 BRONCHIAL EPITHELIAL CELLS EXPOSED TO CIGARETTE SMOKE, SMOKE
 CONDENSATES, OR COMPONENTS THEREOF

<130> VTOB.302VPC

<140> Unknown

<141> 2005-03-29

<150> 60/557,929

<151> 2004-03-30

<160> 5

<170> FastSEQ for Windows Version 4.0

6

<210> 1

<211> 5688

<212> DNA

<213> Artificial Sequence

<220>

<223> Full-length QTPase RNAi construct

<400> 1

```
ctcgaggatc taaattgtga gttcaatctc ttccctattg gattgattat cctttctttt 60
cttccaattt gtgtttcttt ttgcctaatt tatttgttta tcccctttat cctattttgt 120
ttctttactt atttatttgc ttctatgtct ttgtacaaag atttaaactc tatggcacat 180
attttaaagt tgtagaaaa taaattcttt caagattgat gaaagaactt ttttaattgta 240
gatatttcgt agattttatt ctcttactac caatataacg cttgaattga cgaaaatttg 300
tgtccaaata tctagcaaaa aggtatccaa tgaaaatata tcatatgtga tcttcaaata 360
tttgtgtctta tgcaagattg atacttttgt caatggaaga gatttgtgtg atatttttta 420
aatttttatt agtaataaag attctatata gctgttatag agggataatt ttacaaagaa 480
cactataaat atgattgttg ttgttagggg gtcaatgggt cggttcgact gggtatttta 540
taaaatttgt accataccat ttttttcgat attctatatt gtataacca aatttagact 600
ttcgaaatcg tcccaatcat gtccggtttca ctccggtatc ggtaccgttc gggttaatttt 660
catttttttt taaatgtcat taaaattcac tagtaaaaaat agaatgcaat aacatacgtt 720
cttttatagg acttagcaaa agctctctag acattttttac tgtttaaagg ataatgaatt 780
aaaaaacatg aaagatggct agagtataga tacacaacta ttcgacagca acgtaaaaga 840
aaccaagtaa aagcaaagaa aatataaatc acacgagtgg aaagatatta accaagttgg 900
gattcaagaa taaagtctat attaaatatt caaaaagata aatttaaata atatgaaagg 960
aaacatatcc aatacattgt agtttgctac tcataatcgc tagaatactt tgtgccttgc 1020
taataaagat acttgaaata gcttagttta aatataaata gcataataga ttttaggaat 1080
tagtatattg agtttaatta ctatttgact tgtaacagtt tttataattc caaggcccat 1140
gaaaaattta atgctttatt agtttttaac ttactatata aatttttcat atgtaaaatt 1200
taatcgggat agttcgatat tttttcaatt tattttttata aaataaaaaa cttaccctaa 1260
ttatcggtag agttatagat ttatataaaa atctacgggt cttcagaaga aacctaaaaa 1320
tcgggttcggg gcggacgggt cgatcgggtt agtcgatttt caaatattca ttgacactcc 1380
tagttgttgt tataggtaaa aagcagttac agagaggtta aatataactt aaaaaatcag 1440
ttctaaggaa aaattgactt ttatagtaaa tgactgttat ataaggatgt tgttacagag 1500
```

aggtatgagt	gtagttggta	aattatgttc	ttgacgggtg	atgtcacata	ttattttatta	1560
aaactagaaa	aaacagcgtc	aaaactagca	aaaatccaac	ggacaaaaaa	atcggctgaa	1620
tttgatttgg	ttccaacatt	taaaaaagtt	tcagtgagaa	agaatcgggtg	actggtgatg	1680
atataaacia	agggcacatt	ggtcaataac	cataaaaaat	tatatgacag	ctacagttgg	1740
tagcatgtgc	tcagctattg	aacaaatcta	aagaagggtac	atctgtaacc	ggaacaccac	1800
ttaaatgact	aaattaccct	catcagaaaag	cagatggagt	gctacaaata	acacactatt	1860
caacaacctc	aaataaaaacg	tgttcagcta	ctaaaacaaa	tataaataaa	tctatgtttg	1920
taagcatccc	agccatgtta	atggagtgct	attgectgtt	aactctcact	tataaaatag	1980
tagtagaaaa	aatatgaacc	aaaacacaa	aacatctcaa	aatatttgaa	gtaacacaga	2040
atttttacata	caccaaacctt	ataaatcaag	tatttttcatt	gtaacaaatt	ccatgaaaca	2100
tgaaaacaaa	gctataatga	aattaccaac	tcaagcaata	aggttggaaa	agagccatct	2160
gagatattcc	agcaattttac	atctttttgt	ttgattacac	agtgaaggat	cttttgtttg	2220
acaactagta	aaatgattct	tatttgcacc	ttcagctat	tcagctgctt	ttactccaac	2280
cctatagcag	aagtaatggc	gctcatgctc	gttttgtacg	ccttccaact	tcaagggcga	2340
gctctgtatc	gatcttcagg	gaaatgtcaa	gtgctttcac	ggaatgcgtc	agggcaccac	2400
tagaaatgta	ggtaacacca	gtttgtccaa	tcttgtgtac	tgtttcaagg	gtaacatttc	2460
ctgaagcctc	cgtatcaaac	ctcccattga	tcaattctac	agcctcctta	agcatggata	2520
catcaatata	tccgttagat	aatggaacaa	ccatatgttc	cagcattatc	ctagtcaacg	2580
aaagtctttgt	ttgagatgca	tagtctagaa	cctcacgtac	ttcttcaatt	gtcctggttt	2640
caacctcaac	ccctatttga	agtttatttt	gtcccaata	ctgatccaca	gatttttagag	2700
ctttgcccag	acctccagca	gcagatattg	gatttgtctt	tatcattacc	atatcaaata	2760
agcccatctc	gtgattcttc	ccccaccga	tcaataccgc	ccatttatcc	accaaaccgt	2820
atccaggagc	agttttccta	gtctccaaga	tgtaagcagg	gtgtgcagca	tctgccattt	2880
ccttagtttag	tgtagctatt	ccactcattc	tttgcataaa	attgagaaca	accctctcag	2940
ctataacaat	gttgtaagcg	tttccttgta	ctttgccaaa	tttcaagcct	ttatgaactt	3000
tatcgccatc	atttacatac	cactccacct	ttaatgaagg	atcaacttcc	gcgaatatca	3060
tctcagcaag	tgcaattcct	gctatgatcc	cgtcttcctt	tgctagaaaa	tgagcatcgg	3120
attccatata	aagaggaatt	gtcgccctac	aagtcacatc	tcctaaattc	ccagcatctt	3180
cagagagtgc	aagtttcata	acttccttta	aatcataagt	tgggtgtgct	ggtggtttca	3240
cctctaata	ctccactctt	gtattcttgg	tggtcattgc	tgacattttc	accaccaacc	3300
ttggagctgt	aattgcataa	ggatgcactg	tagcagtga	aggaatagct	ctaaacattg	3360
tttttttttg	gggggggtgt	gaaatgaatt	ttgtggaaaa	tagtttttgg	ggcacatcaa	3420
tcttgccgtg	acattcggaa	tgtttctaac	aagaaagata	tcgttgggtc	gagccttgct	3480
ctacatcata	gctcagtgca	taggggcoct	gtgcgggtgc	gccttagtca	agacattgca	3540
gcgagatcat	tacaaccact	atggcggttg	cgctaaccag	ctcgttgatg	gttatagcgc	3600
agggactggc	cttgctgttg	agattatggg	cacctttatt	cttctgtata	ctgtcttctc	3660
cggcactgat	cccaaaccga	atgctagaga	ttccctgtt	cctgtcttgg	ctccactccc	3720
cattggcttt	gctgtcttca	ttgttcacct	cgccaccatt	cccgtcaccg	gcaactggcat	3780
caaccacagc	agcaaaaact	attttccaca	aaattcattt	cacaaccccc	ccaaaaaaaa	3840
accatgttta	gagctattcc	tttactgct	acagtgcac	cttatgcaat	tacagctcca	3900
aggttgggtg	tgaaaatgtc	agcaatagcc	accaagaata	caagagtgg	gtcatttagag	3960
gtgaaaccac	cagcacaccc	aacttatgat	ttaaaggaag	ttatgaaact	tgactctct	4020
gaagatgctg	ggaatttagg	agatgtgact	tgtaaggcga	caattcctct	tgatattgaa	4080
tccgatgctc	attttctagc	aaaggaagac	gggatcatag	caggaattgc	acttgcctgag	4140
atgatattcg	cggaggttga	tccttcatta	aaggtggagt	ggtatgtaaa	tgatggcgat	4200
aaagttcata	aaggcttgaa	atttggcaaa	gtacaaggaa	acgcttacaa	cattgtttata	4260
gctgagaggg	ttgttctcaa	ttttatgcaa	agaatgagtg	gaatagctac	actaactaag	4320
gaaatggcag	atgctgcaca	ccctgcttac	atcttggaga	ctaggaaaaac	tgctcctgga	4380
ttacgttttg	tggaataatg	ggcggtattg	atcgggtggg	ggaagaatca	cagaatgggc	4440
ttatttgata	tggtaatgat	aaaagacaat	cacatatctg	ctgctggagg	tgctggcaaa	4500
gctctaaaa	ctgtggatca	gtatttggag	caaaataaac	ttcaaataag	ggttgaggtt	4560
gaaaccagga	caattgaaga	agtacgtgag	gttctagact	atgcatctca	aacaaagact	4620
tcgttgacta	ggataatgct	ggacaatatg	gttgttccat	tatctaaccg	agatattgat	4680
gtatccatgc	ttaaaggaggc	tgtagaattg	atcaatggga	ggtttgatag	ggaggttcca	4740
ggaaatgtta	cccttgaaac	agtacacaaa	attggacaaa	ctggtgttac	ctacatttct	4800
agtggtgccc	tgacgcattc	cgtgaaagca	cttgacattt	ccctgaagat	cgatacagag	4860
ctcgcccttg	aagttggaag	gcgtacaaaa	cgagcatgag	cgccattact	tctgctatag	4920

```

ggttggagta aaagcagctg aatagctgaa aggtgcaaat aagaatcatt ttactagttg 4980
tcaaacaaaa gatccttcac tgtgtaatca aacaaaaaga tgtaaatgac tggaatatct 5040
cagatggctc ttttccaacc ttattgcttg agttggtaat ttcatatag ctttgttttc 5100
atgtttcatg gaatttgta caatgaaaat acttgattta taagtttggg gtatgtaaaa 5160
ttctgtgtta cttcaaatat tttagagatg tgagctcgtg aaatggcctc tttagttttt 5220
gattgaatca taggggtatt agttttctat ggccgggagt ggtcttcttg cttaattgta 5280
atggaataac cagagaggaa ctactgtgtt atctttgagg aatgttgggc ttttttcgtt 5340
tgaattatca tgaatgaaat tttacttttt cccaatacaa gtttgttttc gtttcttggg 5400
ttttgttatc ccttggttta tgtcttggtt tggcttaaat gattgaagat tacactacct 5460
atgtttctgc tattcctggt gaagatcaca tttagataata atgcatcgaa tgcattaaag 5520
tttcttattg gctctgtcaa aagtattgaa ggtggatttt tctaattggc aagagaaagt 5580
attaaagagg tgatttatta gtacttatat ttttctcagc atctctcttt cagtgttggg 5640
gcttcataaa attagcactt cagagtttca gtcgggagct gaattcga 5688

```

<210> 2

<211> 3600

<212> DNA

<213> Artificial Sequence

<220>

<223> Selection cassette for full-length QTPase RNAi construct

<400> 2

```

tctagaatgt tcgtgcgtca aatggataaa caaaaaaata gcataagtta gttttgttac 60
tcgagagtta tgtattataa ggtatagggg aatgactcaa acataccact gaacttaacg 120
aaacgacgca tatatatact acttaactta acgaaaaagg ggtgagagtg gatgggtgct 180
ggtaaaataat gaagggttta tataacgtca cgtgtcaaaa ttcgatagta gtagtttcgt 240
tagttgtaat agcatatatg gcccaaagtt ataatataga taatatgttt atgtccaact 300
attaacgagt gacatagaca gttcattttg tgaagttcaa tgacatattt gagccctttc 360
ccttttatta tctcctttta tttgttctaa taaaagaatg gcattttatta tgtacataga 420
caaataacta ttttctttgg aatataatth gtttatatat tttaaaatca tgtctcaatt 480
tagtttgttt tgtgcatatt tcaactattc aattttgtcc atatattht taccttcccc 540
catttacaag cattgaaccg ctttgtctac caaaacttat gcacattgca aaaatatcat 600
gtaaagggtt tatgtatgct gtaattaagg tctgaactca tcgtgatttt atttttaggc 660
ttcattgacc actaccaaac tctttgatgc tacaattttc aattatattg gagttcgtat 720
atatccgaat tcgcgtttgc tagggcccat tcgagggaaa aactcccta tcaaggattt 780
tttcataccc agagctcgaa ctcaagacat ctgggttaagg gaagaacagt ctcacccact 840
gcaccatatc cttttgtggg caacaagtaa attttatgta gaacaaaaaa ctatactcga 900
attgataaaa taaatgggtg aaaatattgt tttctttctt acatttttga cagtaaatat 960
gtaggacaat aataattagc gtgggggtctt aagaaaaatta gcatagattt ccagaaattc 1020
caaatcaacc ggcagttcca ggtttgaaaa ctacaactca ttccgacggt tcaaacttca 1080
aaccatgctt gctgactcgg ctcttctttt ctttttcacc aagacagagc agtagtcacg 1140
tgacaccctt cacgtgcctc ccccttttat atttcagact gcaaccctac actttcgcta 1200
cattcactac catattcttt tcaactaagca attttctctc ctacttttct ttaaaccctt 1260
tttttctccc ctaagccatg gcatctagat catgttacgt cctgtagaaa cccaaccctg 1320
tgaaatcaaa aaactcgacg gcctgtgggc attcagtcgt gatcgcgaaa actgtggaat 1380
tgatcagcgt tgggtgggaa gcgcgttaca agaaagccgg gcaattgctg tgccaggcag 1440
tttaacgat cagttcgccg atgcagatat tcgtaattat gcgggcaacg tctggatatc 1500
gcgcgaagtc tttataccga aagggtgggc agggccagcgt atcgtgctgc gtttcgatgc 1560
ggtcactcat tacggcaaaag tgtgggtcaa taatcaggaa gtgatggagc atcaggcgcg 1620
ctatacgcca tttgaagccg atgtcacgcc gtatgttatt gccgggaaaa gtgtacgtat 1680
caccgtttgt gtgaacaacg aactgaactg gcagactatc ccgccgggaa tgggtgattac 1740
cgacgaaaac ggcaagaaaa agcagtcctta cttccatgat ttctttaaact atgccggaat 1800
ccatcgacg gtaattgctt acaccacgcc gaacacctgg gtggacgata tcaccgtggt 1860
cagcagtgct gcgcaagact gtaaccacgc gtctgttgac tggcaggtgg tggccaatgg 1920
tgatgtcagc gttgaactgc gtgatgcgga tcaacagggt gttgcaactg gacaaggcac 1980

```

```

tagcgggact ttgcaagtgg tgaatccgca cctctggcaa ccgggtgaag gttatctcta 2040
tgaactgtgc gtcacagcca aaagccagac agagtgtgat atctaccgcg ttcgcgtcgg 2100
catccgggtca gtggcagtga agggcgaaaca gttcctgatt aaccacaaac cgttctactt 2160
tactggccttt ggtcgtcatg aagatgcgga cttgcgtggc aaaggattcg ataacgtgct 2220
gatggtgcac gaccacgcac taatggactg gattggggcc aactcctacc gtacctcgca 2280
ttacccttac gctgaagaga tgctcgactg ggcagatgaa catggcatcg tggtgattga 2340
tgaaactgct gctgtcggct ttaacctctc tttaggcatt ggtttcgaag cgggcaacaa 2400
gccgaaagaa ctgtacagcg aagaggcagt caacggggaa actcagcaag cgcacttaca 2460
ggcgattaaa gagctgatag cgcgtgacaa aaaccaccca agcgtggtga tgtggagtat 2520
tgccaacgaa ccggataccc gtccgcaagg tgcacgggaa tatttcgcgc cactggcgga 2580
agcaacgcgt aaactcgacc cgacgcgtcc gatcacctgc gtcaatgtaa tgttctgcga 2640
cgctcacacc gataccatca gcgatctctt tgatgtgctg tgctgaacc gttattacgg 2700
atggatgtgc caaagcggcg atttggaac ggagagaag gtactggaaa aagaacttct 2760
ggcctggcag gagaaactgc atcagccgat tatcatcacc gaatacggcg tggatacgtt 2820
agccgggctg cactcaatgt acaccgacat gtggagtgaag gaggatcagt gtgcatggct 2880
ggatatgtat caccgcgtct ttgatcgctc cagcgccgtc gtcggtgaac aggtatggaa 2940
tttcgccgat tttgcgacct cgcaaggcat attgcgcgtt ggcggtaca agaaagggat 3000
cttcactcgc gaccgcaaac cgaagtcggc ggcttttctg ctgcaaaaac gctggactgg 3060
catgaacttc ggtgaaaaac cgcagcaggg aggcaaaaca tgagagctcg tgaaatggcc 3120
tctttagttt ttgattgaat cataggggta ttagttttct atggccggga gtggtcttct 3180
tgcttaattg taatggaata accagagagg aactactgtg ttatctttga ggaatgttg 3240
gctttttctg tttgaattat catgaatgaa attttacttt tcccaatac aagtttggtt 3300
tcgtttcttg gtttttggtt tcccttggtt tatgtcttgg tttggcttaa atgattgaag 3360
attacactac ctatgtttct gctattcctg ttgaagatca catttgataa taatgcatcg 3420
aatgcattaa agtttcttat tggctctgtc aaaagtattg aaggtggatt tttctaattg 3480
gcaagagaaa gtattaaaaga ggtgatttat tagtacttat atttttctca gcatctctct 3540
ttcagtgttg gagcttcata aaattagcac ttcagagttt cagtcgggag ctgaattcga 3600

```

<210> 3

<211> 4134

<212> DNA

<213> Artificial Sequence

<220>

<223> Partial QTPase RNAi construct

<400> 3

```

ctcaggagatc taaattgtga gttcaatctc ttcctattg gattgattat cttttctttt 60
cttccaattt gtgtttcttt ttgcctaatt tattgtgtta tcccctttat cctattttgt 120
ttctttactt atttatttgc ttctatgtct ttgtacaaag atttaaactc tatggcacat 180
attttaaagt tgtagaaaa taaattcttt caagattgat gaaagaactt ttttaattga 240
gatatttcgt agattttatt ctcttactac caataaacg cttgaattga cgaaaatttg 300
tgtccaaata tctagcaaaa aggtatccaa tgaaaatata tcatatgtga tcttcaaata 360
ttgtgtctta tgcaagattg atactttgtt caatggaaga gattgtgtgc atatttttaa 420
aatttttatt agtaataaag attctatata gctgttatag agggataatt ttacaaagaa 480
cactataaat atgattgttg ttgttagggg gtcaatgggt cggttcgact ggttatttta 540
taaaatttgc accataccat ttttttcgat attctatttt gtataaccaa aatttagactt 600
ttcgaaatcg tcccaatcat gtcggtttca cttcggatc ggtaccgttc ggttaatttt 660
catttttttt taaaattcat taaaattcac tagtaaaaaa agaatgcaat aacatacgtt 720
cttttatagg acttagcaaa agctctctag acatttttac tgtttaaagg ataatagaatt 780
aaaaaacatg aaagatggct agagtataga tacacaacta ttcgacagca acgtaaaaga 840
aaccaagtaa aagcaaagaa aatataaatc acacgagtgg aaagatatta accaagttgg 900
gattcaagaa taaagtctat attaaatatt caaaaagata aatttaaata atatgaaagg 960
aaacataatt aatacattgt agtttgctac tcataactcg tagaatactt tgtgccttgc 1020
taataaagat acttgaaata gcttagttta aatataaata gcataataga ttttaggaat 1080
tagtattttg agtttaatta cttattgact tgtaacagtt tttataattc caaggcccat 1140

```

```

gaaaaattta atgcttttatt agtttttaaac ttactatata aattttttcat atgtaaaatt 1200
taatcgggtat agttcggatat ttttttcaatt tattttttata aaataaaaaaa cttaccctaa 1260
ttatcgggtac agttatagat ttatataaaa atctacgggtt cttcagaaga aacctaaaaa 1320
tcggttcgggt gcggacgggtt cgaatcggttt agtcgattttt caaatattca ttgacactcc 1380
tagttgttgt tataggtaaaa aagcagttac agagaggtaa aatataactt aaaaaatcag 1440
ttctaaggaa aaattgactt ttatagtaaaa tgactgttat ataaggatgt tgttacagag 1500
agggtatgagt gtagttggta aattatgttc ttgacgggtg atgtcacata ttatttatta 1560
aaactagaaa aaacagcgtc aaaactagca aaaatccaac ggacaaaaaa atcggctgaa 1620
tttgatttgg ttccaacatt taaaaaagtt tcagtggagaa agaatcgggtg actggtgatg 1680
atataaaaca agggcacatt ggtcaataac cataaaaaat tatatgacag ctacagttgg 1740
tagcatgtgc tcagctattg aacaaatcta aagaaggtag atctgtaacc ggaacaccac 1800
ttaaatgact aaattaccct catcagaaaag cagatggagt gctacaaata acacactatt 1860
caacaacccat aaataaaacg tgttcagcta ctaaaacaaa tataaataaa tctatgtttg 1920
taagcactcc agccatgtta atggagtgtt attgcctgtt aactctcact tataaaatag 1980
tagtagaaaa aatatgaacc aaaacacaac tttatcgcca tcatttacat accactccac 2040
cttaattgaa ggatcaactt ccgcgaatat catctcagca agtgcaattc ctgctatgat 2100
cccgtcttcc tttgctagaa aatgagcatc ggattccata tcaagaggaa ttgtcgctt 2160
acaagtcaca tctcctaaat tcccagcatc tttagagagt gcaagtttca taacttcctt 2220
taaatacataa gttgggtgtg ctgggtggtt cacctctaag gactccactc ttgtattcct 2280
gggtggctatt gctgacattt tcaccaccaa ccttggagct gtaattgcat aaggatgcac 2340
tgtagcagtg aaaggaatag ctctaaacat gtccgtcgct tctcttccat ttcttctcat 2400
tttcgatttt gattcttatt tctttccagt agctcctgct ctgtgaattt ctccgctcac 2460
gatagatctg cttatactcc ttacattcaa ccttagatct ggtctcgatt ctctgtttct 2520
ctgttttttt ctttttggtcg agaactctgat gtttgtttat gttctgtcac cattaataat 2580
aatgaactct ctcatccta caatgattag tttctctcgt ctacaaaacg atatgttgca 2640
ttttcacttt tcttcttttt ttctaagatg atttgctttg accaatttgt ttagatcttt 2700
attttatttt attttctggt gggttggtgg aaattgaaaa aaaaaaaaac agcataaatt 2760
gttatttgtt aatgtattca ttttttggct atttgttctg ggtaaaaatc tgcttctact 2820
attgaatctt tcctggattt ttactccta ttgggttttt atagtaaaaa tacataataa 2880
aaggaataca aaagttttat agattctctt aaaccctta cgataaaaag tggaaatcaa 2940
ataattcagg atcagatgct ctttgattga tttagatgct attacagttg catggcaaat 3000
tttctagatc cgtcgtcaca ttttattttt tgtttaaaata tctaaatctg atatatgatg 3060
tcgacaaatt ctggtggctt atacatcact tcaactgttt tcttttggct ttgtttgtca 3120
acttggtttt caatacgatt tgtgatttct atcgctgaat tttaataca agcaaaactga 3180
tgtaaacac aagcaagaga tgtgacctgc cttattaaca tcgtattact tactactagt 3240
cgtattctca acgcaatcgt ttttgtattt ctcacattat gccgcttctc tactctttat 3300
tccttttggg ccacgcattt tctatttgtg gcaatccctt tcacaacctg atttcccact 3360
ttggatcatt tgtctgaaga ctctcttgaa tcgttaccac ttgtttcttg tgcattgctt 3420
gttttttaga attaatgata aaactattcc atagtcttga gttttcagct tttttagctt 3480
tttgcttttg gttttctgca gatgttttaga gctattcctt tcaactgctac agtgcactct 3540
tatgcaatta cagctccaag gttggtgggtg aaaatgtcag caatagccac caagaataga 3600
agagtggagt cattagaggt gaaaccacca gcacacccaa cttatgattt aaaggaagt 3660
atgaaaactt cactctctga agatgctggg aatttaggag atgtgacttg taaggcgaca 3720
attcctcttg atatggaatc cgatgctcat tttctagcaa aggaagacgg gatcatagca 3780
ggaattgcac ttgctgagat gatattcgcg gaagttgatc cttcattaaa ggtggagtgg 3840
tatgtaaatg atggcgataa agcaagtgtg ttgcctttgt gtggaaatga agaggtactt 3900
gagaggactt tgcgtttatc agtttatgtg tttgtatata tttttgatcc agttattatg 3960
gattatatac gcttgaaaact cattttaagc cattgttatt gaacgtttat caaatacttt 4020
attatgccaa gcaagtcaaa cacatgcttg ttgattgaaa tcaagctata gaaatctctt 4080
cttcacatac agcagtttag attcacaata caacaagcga aacgataaag tttc 4134

```

<210> 4

<211> 3387

<212> DNA

<213> Artificial Sequence

<220>

<223> Selection cassette for partial length QTPase RNAi construct

<400> 4

```

cgttttgacg agttcggatg tagtagtagc cattatttaa tgtacatact aatcgtgaat 60
agtgaatatg atgaaacatt gtatcttatt gtataaatat ccataaacac atcatgaaag 120
acacttttctt tcacggctcg aattaattat gatacaattc taatagaaaa cgaattaaat 180
tacgttgaat tgtatgaaat ctaattgaac aagccaacca cgacgacgac taacgttgcc 240
tggattgact cggtttaagt taaccactaa aaaaacggag ctgtcatgta acacgcggat 300
cgagcaggtc acagtcatga agccatcaaa gcaaaagaac taatccaagg gctgagatga 360
ttaattagtt taaaaattag ttaacacgag ggaaaaggct gtctgacagc caggtcacgt 420
tatctttacc tgtggtcgaa atgattcgtg tctgtcgatt ttaattattt ttttgaaagg 480
ccgaaaataa agttgtaaga gataaaccgg cctatataaa ttcataatatt ttctctccgc 540
tttgaattgt ctcggtgtcc tcctcacttt catcgccgt ttttgaatct ccggcgactt 600
gacagagaag aacaaggaag aagactaaga gagaaagtaa gagataatcc aggagattca 660
ttctccggtt tgaatcttcc tcaatctcat ctctctccgc caaggtaata 720
ggaactttctt ggaagctat ttctgattca atcagggttt tgttttctca atttccctga 780
gatctggaat tcgtttaatt tggatctgtg aacctccact aaatcttttg gttttactag 840
aatcgatcta agttgaccga tcagttagct cgattatagc taccagaatt tggcttgacc 900
ttgatggaga gatccatggt catgttacct gggaaatgat ttgtatatgt gaattgaaat 960
ctgaactggt gaagttagat tgaatctgaa cactgtcaat gttagattga atctgaacac 1020
tgttttaagtt agatgaagtt tgtgtataga ttcttcgaaa cttaggatt tgtagtgtcg 1080
tacgttgaaac agaaagctat ttctgattca atcagggttt atttgactgt attgaactct 1140
ttttgtgtgt ttgcagctca tatggttgtg tttgggaatg tttctgcggc gaatttgcc 1200
tatcaaaacg ggtttttgga ggcactttca tctggaggtt gtgaactaat gggacatagc 1260
tttaggggttc ccacttctca agcgcttaag acaagaacaa ggaggaggag tactgctggt 1320
cctttgcagg tagtttgtgt ggatattcca aggccagagc tagagaacac tgtcaatttc 1380
ttggaagctg ctagtttatc tgcaccttc cgtagtgctc ctgctcctgc taagccttg 1440
aaagttgtaa ttgctgtgtt tggattggct ggattgtcaa ctgcaaagta cctggctgat 1500
gcaggccaca aacctctgtt gcttgaagca agagatgttc ttggtggaaa gatagctgca 1560
tggaaggatg aagatgggga ctggtatgag actggtttac atattttctt cgggtgcttat 1620
ccgaatgtgc agaatttatt tggagaactt gggatcaatg atcggttgca gtggaaggaa 1680
cactccatga tttttgctat gccaaagtaa cctggagaat ttagtagatt tgacttccca 1740
gatgtcctac cagcaccctt aaatggtatt tgggctattt tgcggaacaa cgagatgctg 1800
acatggccag agaaaaataa gtttgctatt ggacttttgc cagccatggt cggcggtcag 1860
gcttatgttg agggccaaaga tggtttatca gtcaaagaat ggatggaaaa gcaggagta 1920
cctgagcgcg tgaccgacga ggtgtttatt gccatgtcaa aggcgctaaa ctttataaac 1980
cctgatgaac tgtcaatgca atgcattttg atagctttga accggtttct tcaggaaaaa 2040
catggttcca agatggcatt cttggatggt aatcctccgg aaaggctttg tatgccagta 2100
gtggatcata ttcgatcact aggtggggaa gtgcaactta attctaggat aaagaaaatt 2160
gagctcaatg acgatggcac ggttaagagt ttcttactca ctaatggaag cactgtcgaa 2220
ggagacgctt atgtgtttgc cgctccagtc gatacctga agctcctttt accagatccc 2280
tggaagaaaa taccgtactt caagaaattg gataaattag ttggagtacc agttattaat 2340
gttcataatat ggtttgatcg aaaactgaag aacacatatg atcacctact ctttagcaga 2400
agtaaccttc tgagcgtgta tgccgacatg tccttaactt gtaaggaata ttacgatcct 2460
aaccgggtcaa tgctggagct agtatttgca ccagcagagg aatggatatc acggactgat 2520
tctgacatca tagatgcaac aatgaaagaa cttagaagaa tcttccctga tgaaatctca 2580
gctgaccaa gcaaaagctaa aattctgaag taccatgtcg ttaagactcc aagatctggg 2640
tacaagacca tcccaaactg tgaaccatgt cgtcctctac aaagatcac tattgaagga 2700
ttctacttag ctggagatta ccaaaaacag aagtacttag ctccatgga aggcgctgtc 2760
ctctctggca aattctgtct tcagttctatt gttcaggatt acgagctact ggctgcgtct 2820
ggaccaagaa agttgtcgga ggcaacagta tcatcatcat gagaaaaggg cgaattcggt 2880
aaccgcagac gagctcgtga aatggcctct ttagtttttg attgaatcat aggggtatta 2940
gttttctatg gccgggagtg gtcttcttgc ttaattgtaa tggaaataacc agagaggaac 3000
tactgtgta tctttgagga atgttgggct ttttctggtt gaattatcat gaatgaaatt 3060
ttacttttcc ccaatacaag tttgttttgc tttcttggtt tttgttatcc cttgggttat 3120
gtcttggttt ggcttaaatg attgaagatt acactaccta tgtttctgct attcctggtt 3180

```

```

aagatcacat ttgataataa tgcatagaat gcattaaagt ttcttattgg ctctgtcaaa 3240
agtattgaag gtggattttt ctaattggca agagaaagta ttaaagaggt gatttattag 3300
tacttatatt tttctcagca tctctcttct agtggtggag cttcataaaa ttagcacttc 3360
agagtttcag tcgggagctg aattcga 3387

```

<210> 5

<211> 3458

<212> DNA

<213> *Arabidopsis thaliana*

<400> 5

```

atggttgtgt ttgggaatgt ttctgcgggc aatttgccct atcaaaacgg gtttttggag 60
gcactttcat ctggagggtt tgaactaatg ggacatagct ttagggttcc cacttctcaa 120
gcgcttaaga caagaacaag gaggaggagt actgctgggc ctttgcaggt agtttgtgtg 180
gatattccaa ggccagagct agagaacact gtcaatttct tggaaagctgc tagtttatct 240
gcatecttcc gtagtgctcc tcgtcctgct aagcctttga aagttgtaat tgctgggtgct 300
ggattggctg gattgtcaac tgcaaagtac ctggctgatg caggccacaa acctctgttg 360
cttgaagcaa gagatgttct tgggtgaaaag atagctgcat ggaaggatga agatggggac 420
tgggtatgaga ctgggtttaca tattttcttc ggtgcttate cgaatgtgca gaatttattt 480
ggagaacttg ggatcaatga tcggttgacg tggaaaggaac actccatgat ttttgctatg 540
ccaagtaaac ctggagaatt tagtagattt gacttcccag atgtcctacc agcaccctta 600
aatggatatt gggctatttt gcggaacaac gagatgctga catggccaga gaaaataaag 660
tttgctattg gacttttgcc agccatgggc ggcggtcagg cttatgttga ggcccaagat 720
ggtttatcag tcaaagaatg gatggaaaag caggaggtac ctgagcgctg gaccgacgag 780
gtgtttattg ccatgtcaaa ggcgctaaac ttataaaacc ctgatgaact gtcaatgcaa 840
tgcattttga tagctttgaa ccggtttctt caggaaaaac atggttccaa gatggcatte 900
ttggatggta atcctccgga aaggccttgt atgccagtag tggatcatat tcgatcacta 960
ggtggggaag tgcaacttaa ttctaggata aagaaaattg agctcaatga cgatggcacg 1020
gttaagagtt tcttactcac taatggaagc actgtcgaag gagacgctta tgtgtttgcc 1080
gctccagtcg atatcctgaa gctcctttta ccagatccct ggaaagaaat accgtacttc 1140
aagaaattgg ataaattagt tggagtacca gttattaatg ttcataatag gtttgatcga 1200
aaactgaaga acacatatga tcacctactc tttagcagaa gtaaccttct gagegtgtat 1260
gccgacatgt ccttaacttg taaggaatat tacgatccta accggtcaat gctggagcta 1320
gtatttgcac cagcagatgg ttgtgtttgg gaatgtttct gcggcgaaat tgccttatca 1380
aaacgggttt ttggaggcac ttcatctgga aggttgtgaa ctaatgggac atagctttag 1440
ggttcccact tctcaagcgc ttaagacaag aacaaggagg aggagtactg ctggctcttt 1500
gcaggtagtt tgtgtggata ttccaaggcc agagctagag aacctgtca atttcttggg 1560
agctgctagt ttatctgcat ccttccgtag tgctcctcgt cctgctaagc ctttgaaagt 1620
tgtaattgct ggtgctggat tggctggatt gtcaactgca aagtacctgg ctgatgcagg 1680
ccacaaacct ctgttgcttg aagcaagaga tgttcttggg ggaaagatag ctgcatggaa 1740
ggatgaagat ggggactggt atgagactgg ttacatatt ttcttcggtg cttatccgaa 1800
tgtgcagaat ttatttggag aacttgggat caatgatcgg ttgcagtgga aggaacactc 1860
catgattttt gctatgccaa gtaaacctgg agaatttagt agatttgact tcccagatgt 1920
cctaccagca cctttaaatt gtatttgggc tattttgcgg aacaacgaga tgctgacatg 1980
gccagagaaa ataaagtttg ctattggact tttgccagcc atggtcggcg gtcaggctta 2040
tggtgaggcc caagatgggt tatcagtcaa agaattggat gaaaagcagg gtagacctga 2100
gcgctgacc gacgaggtgt ttattgccat gtcaaaggcg ctaaacttta taaacctga 2160
tgaactgtca atgcaatgca ttttgatagc ttgaaccgg tttcttcagg aaaaacatgg 2220
ttccaagatg gcattcttgg atggtaatcc tccggaaagg ctttgtatgc cagtagtgga 2280
tcataattcga tcactagggt gggaaagtgc acttaattct aggataaaga aaattgagct 2340
caatgacgat ggcacggtta agagtttctt actcactaat ggaagcactg tcgaaggaga 2400
cgcttatgtg tttgcgcctc cagtcgatat cctgaagctc cttttaccag atccctggaa 2460
agaaataccg tacttcaaga aattggataa attagttgga gtaccagtta ttaatgttca 2520
tatatggttt gatcgaaaac tgaagaacac atatgatcac ctactcttta gcagaagtaa 2580
ccttctgagc gtgtatgccg acatgtcctt aacttghtaag gaattattac atcctaaccg 2640
gtcaatgctg gagctagtat ttgcaccage agaggaatgg atatcacgga ctgattctga 2700
catcatagat gcaacaatga aagaacttga gaaactcttc cctgatgaaa tctcagctga 2760

```

```

ccaaagcaaa gctaaaattc tgaagtacca tgtcgttaag actccaagat ctgggtacaa 2820
gaccatccca aactgtgaac catgtcgtcc tctacaaaga tcacctattg aaggattcta 2880
cttagctgga gattacacaa aacagaagta cttagcttcc atggaaggcg ctgtcctctc 2940
tggcaaattc tgctctcagt ctattgttca ggattacgag ctactggctg cgtctggacc 3000
aagaaagttg tgggaggcaa cagtatcatc atcatgagaa aagggcgaaat tcgttaaccg 3060
cagacaggaa tggatatcac ggactgattc tgacatcata gatgcaacaa tgaaagaact 3120
tgagaaactc ttccctgatg aaatctcagc tgaccaaaagc aaagctaaaa ttctgaagta 3180
ccatgtcgtt aagactccaa gatctgggta caagaccatc ccaaactgtg aaccatgtcg 3240
tcctctacaa agatcaccta ttgaaggatt ctacttagct ggagattaca caaacagaa 3300
gtacttagct tccatggaag gcgctgtcct ctctggcaaa ttctgctctc agtctattgt 3360
tcaggattac gagctactgg ctgctgtctg accaagaaag ttgtcggagg caacagtatc 3420
atcatcatga gaaaagggcg aattcgtaa ccgcagac 3458

```